Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] 1. A sabot that reduces a parasitic weight of a kinetic energy projectile including a rod, comprising:
a sabot base; and
an energetic region;
wherein the energetic region of the sabot burns away at a controlled rate to reduce the parasitic weight of the kinetic energy projectile as the kinetic energy projectile travels through a gun tube.

[c2] 2. The sabot of claim 1, wherein the energetic region comprises an energetic composite that provides support to the rod during a ballistic event as the kinetic energy projectile travels through the gun tube.

[c3] 3. The sabot of claim 1, wherein the energetic region of the sabot is consumed as it travels through the gun tube.

[c4] 4. The sabot of claim 1, wherein the energetic region of the sabot is consumed at a controlled rate.

[c5] 5. The sabot of claim 4, wherein the weight of the sabot after consumption of the energetic region is substantially lighter than an initial weight of the sabot before a ballis-

tic event.

[c6] 6. The sabot of claim 5, wherein the consumption of the energetic region adds velocity to the projectile due to the weight reduction of the energetic region and pressure generated from propelling gases resulting from the consumption of the energetic region.

[c7] 7. The sabot of claim 3, wherein the sabot base remains structurally intact after the energetic region of the sabot has been consumed.

[c8] 8. The sabot of claim 7, wherein the sabot base is designed to support the kinetic energy projectile at a gun tube exit pressure.

[c9] 9. The sabot of claim 1, wherein the sabot is made, at least in part, of aluminum.

[c10] 10. The sabot of claim 1, wherein the sabot base is made, at least in part, of composite materials.

[c11] 11. The sabot of claim 1, wherein the sabot base is made, at least in part, of metallic material.

[c12] 12. The sabot of claim 1, wherein the energetic region of the sabot is made, at least in part, of a wrap of a composite applied to the sabot base, the wrap being comprised of a carbon thread wet with a mixture of an ener-

getic composite.

[c13] 13. The sabot of claim 12, wherein the energetic composite is comprised of an energetic material selected essentially from the group of: carbon thread, ultem, epoxy resin, steel, carbon, aramid fiber, nylon, high density polyethylene, low density polyethylene, Energetic Thermo Plasticizer Elastomer, glycidyl azide polymer, HMX, CL20, nitrocellulose, RDX, an epoxy resin, a thermoplastic material, and a thermoset plastic material, and energetic material.

[c14] 14. The sabot of claim 1, wherein the energetic region of the sabot is made, at least in part, of a composite tape comprised essentially of a group of: carbon thread, ultem, epoxy resin, steel, carbon, aramid fiber, nylon, high density polyethylene, low density polyethylene, Energetic Thermo Plasticizer Elastomer, glycidyl azide polymer, HMX, CL20, nitrocellulose, RDX, an epoxy resin, a thermoplastic material, and a thermoset plastic material, and energetic material.

[c15] 15. The sabot of claim 1, wherein the energetic region of the sabot is made, at least in part, of a pre-preg tape selected essentially from a group of: carbon fibers, aramid fibers, metallic fibers, shape memory alloy fibers, high density polyethylene, low density polyethylene, nylon,

and resin.

[c16] 16. The sabot of claim 15, further comprising an energetic tape that is placed over an non-energetic pre-preg tape made for the sabot base in the energetic region.

[c17] 17. A kinetic energy projectile including a rod and a sabot that reduces a parasitic weight of the kinetic energy projectile, the sabot comprising:
a sabot base; and
an energetic region;
wherein the energetic region of the sabot burns away at a controlled rate to reduce the parasitic weight of the kinetic energy projectile as the kinetic energy projectile travels through a gun tube.

[c18] 18. The kinetic energy projectile of claim 17, wherein the energetic region comprises an energetic composite that provides support to the rod during a ballistic event as the kinetic energy projectile travels through the gun tube.

[c19] 19. The kinetic energy projectile of claim 17, wherein the energetic region of the sabot is consumed as it travels through the gun tube.

[c20] 20. The kinetic energy projectile of claim 17, wherein the energetic region of the sabot is consumed at a controlled

rate.

[c21] 21. The kinetic energy projectile of claim 20, wherein the weight of the sabot after consumption of the energetic region is substantially lighter than an initial weight of the sabot before a ballistic event.

[c22] 22. The kinetic energy projectile of claim 21, wherein the consumption of the energetic region adds velocity to the projectile due to the weight reduction of the energetic region and pressure generated from propelling gases resulting from the consumption of the energetic region.

[c23] 23. The kinetic energy projectile of claim 19, wherein the sabot base remains structurally intact after the energetic region of the sabot has been consumed.

[c24] 24. The kinetic energy projectile of claim 23, wherein the sabot base is designed to support the kinetic energy projectile at a gun tube exit pressure.

[c25] 25. The kinetic energy projectile of claim 17, wherein the sabot is made, at least in part, of aluminum.

[c26] 26. The kinetic energy projectile of claim 17, wherein the sabot base is made, at least in part, of composite materials.

[c27] 27. The kinetic energy projectile of claim 17, wherein the

sabot base is made, at least in part, of metallic material.

[c28] 28. The kinetic energy projectile of claim 17, wherein the energetic region of the sabot is made, at least in part, of a wrap of a composite applied to the sabot base, the wrap being comprised of a carbon thread wet with a mixture of an energetic composite.

[c29] 29. The kinetic energy projectile of claim 28, wherein the energetic composite is comprised of an energetic material selected essentially from the group of: carbon thread, ultem, epoxy resin, steel, carbon, aramid fiber, nylon, high density polyethylene, low density polyethylene, Energetic Thermo Plasticizer Elastomer, glycidyl azide polymer, HMX, CL20, nitrocellulose, RDX, an epoxy resin, a thermoplastic material, and a thermoset plastic material, and energetic material.

[c30] 30. The kinetic energy projectile of claim 17, wherein the energetic region of the sabot is made, at least in part, of a composite tape comprised essentially of a group of: carbon thread, ultem, epoxy resin, steel, carbon, aramid fiber, nylon, high density polyethylene, low density polyethylene, Energetic Thermo Plasticizer Elastomer, glycidyl azide polymer, HMX, CL20, nitrocellulose, RDX, an epoxy resin, a thermoplastic material, and a thermoset plastic material, and energetic material.

[c31] 31. The kinetic energy projectile of claim 17, wherein the energetic region of the sabot is made, at least in part, of a pre-preg tape selected essentially from a group of: carbon fibers, aramid fibers, metallic fibers, shape memory alloy fibers, high density polyethylene, low density polyethylene, nylon, and resin.

[c32] 32. The kinetic energy projectile of claim 31, further comprising an energetic tape that is placed over an non-energetic pre-preg tape made for the sabot base in the energetic region.

[c33] 33. A cartridge comprising a housing and a kinetic energy projectile, the kinetic energy projectile including a rod and a sabot that reduces a parasitic weight of the kinetic energy projectile, the sabot comprising:
a sabot base; and
an energetic region;
wherein the energetic region of the sabot burns away at a controlled rate to reduce the parasitic weight of the kinetic energy projectile as the kinetic energy projectile travels through a gun tube.